DQO Step	Medium: / Investigation Phase: / Investigation Item:	Floodplain Soil Phase 1A Comparison to Site-Specific Risk Values	Phase 1B Comparison to Background Reference Conditions	Phase 2 Additional sampling (if necessary) to develop risk assessment exposure estimates
1	***State the Problem***			
	i) Problem description	Potential risk to industrial workers from exposure to on-Site soils has been identified in a human health risk assessment. It is not known if potential soil contamination in the floodplain (a) poses risks to human receptors due to recreational use, and (b) is a result of migration from the Site. Analysis of floodplain soil samples is required to make these assessments. It is also unknown whether floodplain soils pose ecological risks either in-situ or if soils are eroded and enter the Great Miami River (GMR).		If, during Phase 1, floodplain soil containing contaminants at concentrations greater than screening values and background reference conditions is identified, characterization of conditions within the exposure unit is required for risk assessment purposes.
	ii) Planning team	See note at bottom		
	iii) Conceptual model	- Cover material at the Site is limited or non-existent, which could lead to erosional run-off of contaminants towards the floodplain of the GMR. - In addition, movement of contaminants in dust particles carried by wind may result in deposition of contaminants off-Site. - Soil contaminants are assumed to have been deposited by erosion and mixed by subsequent flooding events. -The floodplain can serve as habitat for small mammals and birds.		
	iv) General intended use for data	The data collected will be screened against health-based and ecological risk values. The goal of the investigation is to identify risks associated with surficial soil in the floodplain. The goal is not to identify individual areas of contamination.	The data collected from sampling locations along the Site's boundaries will be compared to upstream floodplain soil conditions, to determine if there are any measurable inputs of contaminants from the Site. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.	The collected data will be used to generate human health and/or ecological exposure estimates for a risk assessment. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.
	v) Resources, constraints, deadlines	Sufficient resources will be committed to sample off-Site soil under the OU2 RI/FS work plan. Sampling may be postponed due to flooding, and could be constrained due to access agreements in off-Site areas.		
2	***Goals of the Study:***			
	i) Primary study question	Do near-Site floodplain soils contain contaminants at concentrations that pose a potential risk to receptors, based on the use of screening criteria, i.e., residential soil RSLs, and/or Site-specific risk-based values?	Does the Site add contaminants to soil in the floodplain of the GMR near the Site?	Do floodplain soils contain contaminants originating from the Site that pose unacceptable health risks, and if so, what are those risks?
	ii) Alternate outcomes or actions	- If sampling demonstrates that contaminants in soil are less than risk-based screening levels/criteria, no further sampling is planned.	- If sampling demonstrates conditions adjacent to the Site are not greater than those found in background reference soils, no furthersampling is planned.	- If sampling demonstrates that health risks are acceptable, no further action is required.

	- If sampling demonstrates that contaminant concentrations are greater than screening levels/criteria, and greater than background reference conditions (see Phase 1B to right), further evaluation and/or remedial measures may be warranted.	- If sampling demonstrates conditions are greater than background, and that contaminant concentrations are greater than Action Level criteria (see Phase 1A to left), further evaluation and/or remediation may be warranted.	- If sampling demonstrates unacceptable risks, further evaluation, risk management and/or remediation would be required.
iii) Type of problem (decision or estimation)[1]	Decision (Action Level)	Decision (Action Level)	Estimation
iv.a) Decision statement	Determine whether any contaminant concentrations are greater than USEPA residential soil RSLs or site-specific risk values in off-Site floodplain soil near the Site.	Determine whether any measurable input of contaminants from the Site, relative to background reference conditions, occurs in near-Site floodplain soil near the Site.	--
iv.b) Estimation statement & assumptions	--	--	The parameter of interest is 95% UCL of the mean (for estimating inhalation, dermal exposure, and ingestion risks, etc.) of soil contaminant concentrations within an identified off-Site exposure area.

3 ***Identify Information Inputs:***

i) Information types needed	- Soil sample analysis is required to assess conditions in the floodplain of the GMR near the Site. - Soil samples will be collected at locations adjacent to (i.e., downgradient of) known on-Site issues, and also biased toward erosional areas. -Background soil contaminant concentrations (from Table 3.1?)		- This would be a supplemental data collection effort, with analyses performed on soil samples obtained to fill in any data gaps across the exposure area.
ii) Information sources	- New data from the investigation will form the basis of assessment. The results from three previous sediment samples collected from the GMR will be considered during interpretation of the data obtained.		- New data from the investigation will form the basis of assessment. Available previous validated data (e.g., from Phase 1), within the exposure area would also be used.
iii) Basis of Action Level	Action Levels are: - USEPA Residential soil RSLs -USEPA ESLs	The selected Action Level is a Background Threshold Value (e.g., 95th percentile) based on background reference conditions.	--
iv) Appropriate sampling & analysis methods	Methods are described in the Field Sampling Plan (CRA, January 2011) and the Quality Assurance Project Plan (CRA, September 2008).		

4 ***Define the Boundaries of the Study:***

i) Target population, sample units	The target population is surficial soil on the floodplain of the GMR near the Site. CRA has defined the exposure unit of the floodplain to be the bike path/recreational trail. The sampling units are individual samples collected from surface soil located between the Site embankment and the bike path.	The sampling units are individual samples collected from surface soil from background reference sampling locations. Background reference sampling locations will be identified in areas outside a reasonable zone of potential influence (via surface runoff or substantial airborne dust deposition) for the Site.	Target population is surficial floodplain soils comprising the exposure unit for assessment of exposure risks for human receptors.
ii) Specify spatial boundaries	The spatial boundaries of the floodplain soil sampling locations are the floodplain soil of the GMR, located between the Site embankment and the bike path/recreational trail.	Distance from the Site and prevailing wind directions will be considered in making this determination.	The spatial boundaries are the limits of the surficial soils in the identified off-Site exposure area (based on Phase 1 findings).
iii) Specify temporal boundaries	The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on exposure assumptions of the Action Levels.		
iv) Identify any other practical constraints	Due to the presence of a high pressure gas line in the floodplain, soil samples will be hand-dug. If different surficial soil subtrates are encountered (e.g., silt vs. sand vs. clay), these differences may require additional sampling (e.g., further reference samples) to appropriately evaluate potential Site-related impacts. Off-Site sampling may be restricted by permission of property owners, e.g. for background locations.		Further practical constraints are not anticipated for sampling of floodplain soils near to the Site.
v.a) Scale of inference for decision making	Comparisons to Action Levels will be carried out on an individual-location basis.	Comparisons to background reference conditions will be carried out on an individual-location basis.	--
v.b) Scale of estimates	--	--	The scale of the exposure estimate is to be identified in a Site-specific risk assessment.